

**HIGH-CAPACITY NANOSTRUCTURED GERMANIUM-CONTAINING  
MATERIALS AND LITHIUM ALLOYS THEREOF****Abstract of the Disclosure**

Electrodes comprising an alkali metal, for example, lithium, alloyed with nanostructured materials of formula  $\text{Si}_z\text{Ge}_{(z-1)}$ , where  $0 < z \leq 1$ ; formula  $\text{Si}_z\text{Ge}_{(z-1)}$ , where  $0 < z < 1$ ; and/or germanium exhibit a combination of improved capacities, cycle lives, and/or cycling rates compared with similar electrodes made from graphite. These electrodes are useful as anodes for secondary electrochemical cells, for example, batteries and electrochemical supercapacitors.